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ABSTRACT

A study examined college students' academic delay of gratification, that is, their preference for an immediately available option (go to a concert the day before a test) or a delayed alternative (stay home studying for a test). Differential explanations of academic delay of gratification between task, performance approach, and performance-avoid goal-oriented college students (n=102) also were examined, as well as their motivational tendencies and use of volitional strategies. Results showed that differences between task, performance-approach, and performance-avoid goal-oriented college students are highly related to their different motivational tendencies and use of volitional strategies. Goal orientation of mastery and understanding academic tasks is related to students' preference for activities that would facilitate attainment of long-term academic goals. Likewise, competing for grade is related to greater preference for delay of gratification to secure long-term academic achievement. In contrast, having a performance-avoid goal orientation is associated with the high value of the delay alternatives but at the same time with little use of volitional strategies. Further, task engagement for the sake of mastering the task or for the sake of showing ability and skills is associated with thinking and considering long-term goals. In contrast, avoiding task engagement is associated with learners' short-term thinking that will preclude them from delaying gratification, which in turn is necessary for long-term academic success. Contains 90 references, two tables of data, and one figure; appendixes contain sample scales. (Author/BT)

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Sustaining Motivation and Academic Goals: The Invaluable Role of Academic Delay of Gratification

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Abstract

This study examined college students' academic delay of gratification; that is, their preference for an immediately available option (e.g., go to a favorite concert the day before a test) or a delayed alternative (e.g., stay home studying for a test). Differential explanations of academic delay of gratification between task, performance-approach, and performance-avoid goal-oriented college students ($\underline{N}$ = 102) were also examined, as well as their motivational tendencies and use of volitional strategies. Results show that differences between task, performance-approach, and performance-avoid goal-oriented college students are highly related to their different motivational tendencies and use of volitional strategies. Goal orientation of mastery and understanding academic tasks is related to students' preference for activities that would facilitate attainment of long-term academic goals. Likewise, competing for grade is related to greater preference for delay of gratification to secure long-term academic achievement. In contrast, having a performance-avoid goal orientation is associated with highly value the delay alternatives but at the same time little use of volitional strategies. Further, task engagement for the sake of mastering the task or for the sake of showing ability and skills is associated with thinking and considering long-term goals. In contrast, avoiding task engagement is associated to learners' short-term thinking that will preclude them from delaying gratification, which in turn is necessary for long-term academic success.

Sustaining Motivation and Academic Goals: The Invaluable Role of Academic Delay of Gratification[1]

Academic delay of gratification refers to students' postponement of immediately available opportunities to satisfy impulses in favor of pursuing chosen important academic rewards or goals that are temporally remote but ostensibly more valuable (Bembenutty, 1997; Bembenutty & Karabenick, 1999). Successful self-regulated learners typically engage in academic delay of gratification by deferring attractive activities (e.g., have fun with friends), for the sake of achieving long-term goals (e.g., get a high final course grade). In contrast, less skilled learners engage in immediate gratification that could preclude them from academic success.

There are striking individual differences in the motivational determinants of delay behavior. Motivational determinants, such as expectancy for success, interest, utility, and task value are known to influence learners' task's engagement and choice in general (Eccles, 1983; Wigfield & Eccles, 1992; Eccles, Wigfield, & Schiefele, 1998; Pintrich & De Groot, 1990; Pintrich et al. 1993) and are also known to influence delay preference in particular (Mischel, 1996). These differences may be explained by learners' task and/or performance goal orientations; that is, engaging in school activities for the sake of mastery of a task or for the sake of demonstrating ability and avoiding failure. Further, these differences may also be explained by learners' ability to use self-regulatory strategies or volitional control strategies to maintain intentions when attractive alternatives may arise (Corno, 1993; Fuhrmann & Kuhl, 1998; García et al. 1998; Kuhl & Fuhrmann, 1998; Kanfer & Heggestad, 1998; Xu & Corno, 1998; Zimmerman, 1989, 1998a). Until now, the relationship between academic delay of gratification and students' different goal orientations has not been understood.

The purpose of the present study was to examine the relationship between delay of gratification and learners' different goal orientations, motivational determinants of delay preference, and use of volitional strategies. One major focus was to compare the extent to which these relationships are different among learners with a preferential tendency for task, performance-approach, and performance-avoid goal orientations.

Previous Work on Delay of Gratification

The greater majority of research on delay of gratification comes from the work of Mischel and his associates (Mischel, 1996). Mischel (1981) posits the theory that delay of gratification occurs when "people attempt to delay immediate smaller gratification for the sake of more distant but deferred goals" (p. 244). In Mischel's paradigm, children are presented with the choice of waiting for a large desirable reward (e.g., two cookies), or not waiting and receiving instead a less desirable reward (e.g., one cookie). In an amazing study, Mischel, Shoda, and Peake (1988) found that children who opted to delay gratification as preschoolers, years later achieved more during high school and were academically and socially more competent than were children who preferred immediate gratification.

According to Mischel (Metcalfe & Mischel, 1999; Mischel, 1973; Mischel, Cantor, & Feldman, 1996), the ability to delay gratification is a process of the self-regulatory system of willpower that orchestrates maintenance of motivation and enactment of goals. According to Mischel, the self-regulatory system is one by which individuals must guide their behavior, often when they do not have external coercive stimuli. Mischel conceptualizes delay of gratification among children as a competence necessary for development of self-control and willpower. In contrast to Mischel's approach, other researchers conceptualize delay of gratification as a character trait that involves ego control (e.g., Funder, Block, & Block, 1980).

Importantly, there is evidence that suggests that delay of gratification is a multidimensional construct (Durden, 1997; Ward et al. 1989). For example, Ward and her associates (1989) were concerned with the sociopolitical and achievement dimensions of delay of gratification.

Consequently, given that delay of gratification is not a homogeneous concept, a global or a general conceptualization of delay of gratification could be misleading. Breaking down delay of gratification into its dimensions could provide a better understanding of its processes. Thus, in the present research agenda the dimension of concern is academic delay of gratification.

Academic Delay of Gratification

In an attempt to fill the gap created by diminished empirical attention that has been given to the specific role that delay may play in facilitating learners' academic success and their learning processes, researchers have begun to examine students' preference for delay of gratification in academic settings (Bembenutty, 1997; Bembenutty & Karabenick, 1996). In a series of initial studies, Bembenutty (1997) developed the 10-item Academic Delay of Gratification Scale (ADOGS) to assess individual differences in academic delay of gratification (ADOG) (see Appendix A). The ADOGS operationalizes ADOG by determining the likelihood that students would select activities associated with long- versus short-term goal satisfaction. For each situation, the students first rated their preference for an option that offered immediate gratification, such as "Going to a favorite concert, play, or sporting event, even though it may mean getting a lower grade on an exam in this class to be taken the next day," or a delayed gratification option such as: Staying home and studying to increase your chances of getting a higher grade."

In an interesting set of studies using the ADOGS, Bembenutty and Karabenick (1996; Bembenutty, 1997) demonstrated an extensive association between students' preference for delay, motivational tendencies, and use of learning strategies. Students with greater delay of gratification reported that they were more academically motivated, higher self-efficacious, and intrinsically interested in learning. Students with greater delay preference reported also greater use of cognitive strategies, such as critical thinking, rehearsal, and elaboration, as well as use of metacognition. Students with high delay of gratification also successfully use resource management strategies, such as effort regulation, control of time, and study environment. There is evidence that supports an association between ADOG and students' motivational tendencies and use of learning strategies. ADOG serves, therefore, to facilitate knowledge acquisition and maintain intentions and goals.

My approach of academic delay of gratification conceptualized to a great extant within the Mischel's competence view. I conceptualize delay of gratification as a learning strategy and/or as an outcome of successful strategy use (Bembenutty, 1997; Bembenutty & Karabenick, 1999; Karabenick & Bembenutty, 1998a, 1998b). Figure 1 shows a model of self-regulation with the various functions of delay of gratification according to different theoretical approaches. In the model, a conceptualization of delay of gratification as a character trait will predetermine volition, motivation, and cognition. In contrast, delay of gratification conceptualized as a competence, as well as a strategy and as an outcome, will be a function of volition, motivation, and cognition that will directly influence basic volitional and self-regulatory strategies (e.g., motivational and emotional control). In an academic setting, delay of gratification will serve as a learning strategy, which is important in order to orchestrate other specific volitional strategies. In other words, academic delay of gratification could be considered as a competence that would be used when needed. Concomitantly, delay of gratification could be an outcome of successful strategy use (Bembenutty & Karabenick, 1997, 1998; Karabenick & Bembenutty, 1998a, 1998b). Thus, academic delay of gratification is an outcome of the individual's specific cognitive, volitional, and motivational task engagement. Simultaneously, successful academic delay of gratification will occur depending on the individual's history of successes and expectancy-task value. Without an expectancy of success, an individual will not be able to resist attractive temptations over a long period of time.

Academic Delay of Gratification's Motivational Determinants

Academic delay of gratification is multi-determined by the learners' motivational components. Different perception, value, and utility of both the delay and the non-delay alternative will

determine choice and task engagement. Indeed, Mischel (1974) posits that "it is necessary to consider the determinants of the individual's choice to delay for the sake of more preferred delayed outcomes" (p. 287). He emphasizes that delay is highly determined by the value of the reward and the expectancy for success. Expectancy and value of the alternatives in a delay of gratification condition influence the choices of action as well as the likelihood of resisting temptations when attractive options arise (Mischel, 1996). In an amazing study using a "clown box", Mischel and his associates (Mischel, 1970; Mischel et al. 1989) gave to the preschoolers the alternative to get an immediately available but smaller reward or to wait for a delayed reward that was temporarily distant. The researchers varied the value of the rewards. They found that delay of gratification was determined by the outcome expectancy of obtaining the preferred choice and the perceived value of the alternatives.

Expectancy-value theory, rooted in Atkinson (1966) and Feather (1982), accentuates expectancy and value as two important determinants of task choices. For example, Eccles and her associates (Eccles, Wigfield, & Schiefele, 1998; Wigfield & Eccles, 1992; Wigfield, Eccles, & Rodriquez, 1998) highlight the *importance*(e.g., important of learning the course material), *interest* (e.g., interest in the content of the course), *utility* (e.g., perceived usefulness of the course material), and *perceived cost of success* (e.g., time and effort to do the task).

In a previous study with college students, Karabenick and Bembenutty (1998) assessed the relationship between delay and the expectancy of academic success, as well as their interest and task value. They first gave the ADOGS to obtain an indicator of the students' delay preference. Then, to examine the motivational determinants of delay (see Appendix A for a sample of the scale) students reported how much they *value*, find *useful* and *interesting* the delay and the immediate alternatives presented in the ADOGS. For example, the researchers determined the motivational determinants of *expectancy* of academic success by gauging the relative attractiveness of temporarily remote goals as compared to immediate gratification. The same procedure was done to determine college students' interest and task value. They found that differential scores reflecting interest, value, and expectancy for success predicted delay preference.

The present research agenda sought to extend the preliminary finding related to the motivational determinants of choice to delay. In particularly, I am interested in *interest*, *value*, *utility*, and *perceived cost of success*. In this study, *social expectancy* for success was also included. Social expectancy is defined as students' belief that by choosing the delay alternative versus the immediate alternative they will achieve social goals and/or avoid social problems. Social expectancy is known to influence task selection and task engagement. (Anderman, 1999; Karabenick, 1996; Ryan, Hicks, & Midgley, 1997; Wentzel, 1991, 1999).

Academic Delay of Gratification and Goal Orientations

Unlike achievement-related motivational determinants of delay of gratification, which are largely centered on beliefs about ability and value of the reward or academic tasks, students' goal orientation is concerned with *why* students approach learning. Two major goal orientations have been identified in the literature: 1) task (also called mastery and learning) and 2) performance goal (also called ego and ability) orientations (Ames, 1992; Dweck, 1998; Dweck & Leggett, 1988; Maehr & Midgley, 1991; Nicholls, 1984).

First, task goal orientation refers to students' engagement in challenging schoolwork for the sake of mastery the tasks (Anderman & Anderman, 1999; Karabenick & Collins-Eaglin, 1997; Maehr & Midgley, 1991; Pintrich & García, 1991; Wolters, Yu, & Pintrich, 1996). Task goal-oriented students focus their attention on understanding class work, selecting challenge tasks for themselves (Ames, 1992), and remaining highly interested in the task (Maehr, 1989). High task goal-oriented learners are known to be self-efficacious and developed in their competence. Second, performance goal orientation refers to students' engagement in academic tasks to demonstrate high ability or

avoidance failure. Performance-goal-oriented learners are driven to protect the self. Performance goal orientation has two different components: approach and avoidance (Duda & Nicholls, 1992; Elliot, 1997; Elliot & Harackiewicz, 1996; Meece, Blumenfield, & Hoyle, 1988; Middleton & Midgley, 1997). Performance-approach goal-oriented learners engage in learning to demonstrate competence and ability. In contrast, performance-avoidance goal-oriented learners' engagement in academic tasks is primarily to avoid demonstration of incompetence or lack of ability.

Task-goal-oriented students are concerned with improvement, progress, effort regulation, and intrinsic motivation. They choose challenging tasks for themselves and have a higher level of achievement (Pintrich & Schunk, 1996). In contrast, performance goal-oriented students are concerned with high grades, performing better than others, avoiding failure, demonstrating self-worth; they choose easy tasks, and have a low level of achievement (Pintrich & Schunk, 1996). Often goal theory is understood as assuming that the students are centered only in the present tasks and that they are not concerned with future orientations (Creten, Lens, & Simons, 1998; Husman & Lens, in press; Lens & Rand, 1997). However, task-oriented or performance-oriented learners may engage in their present tasks considering their long-term goals. It is in this situation that could explain their diverse tendencies to delay gratification, that is, engaging in a present task with the intention to accomplish distant goals.

Although there are some suggestions in the literature of a relationship between academic delay of gratification and students' goal orientations, these relationships have not yet been examined. Thus, the present study was designed to provide additional evidence of how goal orientations relate to academic delay of gratification. Task goal-oriented learners were expected to have greater preference for delay of gratification because they seek challenging tasks, are self-efficacious, and have intrinsic motivation for task engagement. In contrast, performance goal learners were expected to have less preference for delay of gratification because they are less willing to take risks, choose easy tasks, and avoid failure (Pintrich & Schunk, 1996). However, this last point is debatable because Pintrich and García (1994) reported that learners could be both intrinsically and extrinsically motivated to learn. Indeed, Bembenutty (1997, Bembenutty & Karabenick, 1996) found that academic delay of gratification is significantly and positively related to both intrinsic and extrinsic motivation to learn. Thus, this study will serve to clarify this debate. In contrast, it a negative correlation between academic delay of gratification and performance-avoid goal orientation can be expected because students with this orientation, rather than to initiate goal-directed responses related to learning, their goal is to avoid task engagement and effort. Their use of volitional strategies is directed to demonstrate that they are not incompetent. Thus, they will not engage, for example, in a long-term project because they have difficulty handling unpleasant but valuable tasks and fail to recognize the long-term benefit of challenging situations. In sum, performance-avoid oriented students might make less use of volitional strategies that would be able to help them to successfully complete important academic tasks.

Academic Delay of Gratification and Volitional Strategies

Learning over long periods under significant obstacles often involves avoiding alternative activities that are attractive. Students need to use self-regulation and volitional control to remain task-focused (Corno, 1989; Heckausen, 1991, Wolters, 1998; Xu & Corno, 1998; Zimmerman, 1994). An important function of delay of gratification is to orchestrate an enactment of goals and intentions. Intentional self-imposed delay of gratification facilitates negotiation between immediately available but less valuable goals and highly valuable long-term academic goals. Self-regulated learners are problem-solving agents who know how to negotiate demands from their present environment and their long-term goals. For example, when faced with academic difficulties that could affect academic goals, a self-regulated learner would seek help from teachers, peers, and parents (Arbeton, 1998; Karabenick, 1998), and this is making effective use of available personal resources. They would also orchestrate their environment to serve a very adaptive

purpose that facilitates academic success by self-imposing constraints to their own actions. Indeed, they would engage in self-regulation or the use of volitional strategies.

Kuhl's (1985) action control theory posits that there are several self-regulatory strategies, including attention, encoding, motivation, emotion, environment, and information processing control that will help individuals to remain task-focused. Similar to Kuhl, Lopez and Little (1996) posit that action-control of beliefs and emotional regulation are two important factors related to learners' regulation of their social world. Accordingly, once a student has chosen to stay in the library to do an important assignment, she could be able to maintain her intentions by controlling her thoughts, emotions, and motivation. In an academic setting, delay of gratification would require action control and skillful use of self-regulation and volitional control (Corno, 1989, 1993; García et al. 1998; Menec, Perry, Struthers, 1996; Snow, Corno, & Jackson, 1996; Zimmerman, 1998b). For example, without the ability to delay gratification, a student who has the intention to complete an assignment will soon be frustrated and succumb to temptation because she will do not know how to enact her goal by activating a series of volitional strategies to remain task focus (Gollwitzer & Schaal, 1998). Consequently, she will need both delay of gratification and the use of volitional strategies to implement intentions.

Corno (1993) proposes that once students have made a commitment to engage in a task, volition is important to follow up the intentions. Accordingly, motivation is not enough to remain task-oriented. Students would need to distract themselves from an environment that could preclude them from their goals. Corno (1993) skillfully applies Kuhl's six strategies of action control to an educational setting. Specifically, she explains that emotional and motivational control are two essential factors that product goal directed behavior. Like Corno, Zimmerman (1998a) proposes that skillful self-regulated students are those who use volition or performance control to maintain intention in the light of distracting alternatives. Like Bandura (1986), Zimmerman (1998a) explains that there is a reciprocal determinant of behavior in which the person, behavior, and environment interact in a process and feedback (Zimmerman & Risemberg, 1997). In spite of these general findings, little is known about how these volitional strategies orchestrate with students' goal orientations to enhance implementation of intention and students' delay tendencies. Thus, in this study, it was expected that delay of gratification would not only be associated with use of volitional strategies but would also be a function of volitional strategy use. Further, it was expected that students with task and performance-approach orientations would report using volitional strategies to attain important academic goals. In contrast, performance-avoid goal oriented students would use less volitional strategies, such as self-efficacy and motivational control.

The present study

The present study was designed to provide additional evidence of the relationship between academic delay of gratification and its determinants. It is not known how academic delay of gratification is related to students' different goal orientation. In addition, while some research has revealed some of the motivational factors that determine delay choice and volitional strategy use in an academic setting (Karabenick & Bembenutty, 1998a, 1998b), it is not known how these motivational factors vary depending on the students' different goal orientations. Participants in this study were college students registered in math courses because the literature related to goal orientation and expectancy-value has generally included participants from math courses (e.g., Anderman & Anderman, 1999; Eccles, Wigfield, & Schiefele, 1998; Middleton & Midgley, 1997; Midgley, Feldlaufer, & Eccles, 1989; Pintrich & De Groot, 1990). In addition, mathematics is a critical skill that is not only related to learning in an educational setting, but it is related to college admission and occupational choices (Eccles et al. 1985). The goal here was to maintain a greater consistency with previous work.

Thus, the research questions were as follows. First, are there differences among the students as far as their task, performance-approach, and performance-avoid goal orientations on academic

delay of gratification, motivational determinants, and use of volitional strategies go? Second, is academic delay of gratification similarly related to goal orientations, motivational determinants, and use of volitional strategies among learners with task, performance-approach, and/or performance-avoid goal orientations.

Method

Participants

Participants were college students (N = 102; 62 females and 40 males) enrolled in undergraduate math courses at a large, public, Midwestern university. Twenty of the participants were graduate students. Sixty seven of the participants were Caucasians and 30 were members of different minority groups (mostly African Americans, Hispanics, and Asians). Five students did not report their ethnicity. Participation was voluntary and anonymous. A lottery prize of $25.00 was awarded to one of the participants as an inducement for participation. Some of the students obtained extra credit for their participation. The students took the survey to their home and returned it at the next class meeting.

Measures

Academic Delay of Gratification. In this study, 3-items from a short version of the Academic Delay of Gratification Scale (ADOGS; Bembenutty, 1997), were used [2] (Cronbach α was .72, M = 2.93, SD = .71, for this study). The ADOG examines students' delay of gratification preference in relation to the math course where they were currently enrolled. The students rated their preference for an immediately available attractive option versus a delayed alternative. An example (see Appendix A) is "Delay studying for an exam in this class the next day even though it may mean getting a lower grade, in order to attend a concert, play, or sporting event" versus "Stay home to study to increase your chances of getting a high grade on the exam." Students responded on a four-point scale: Definitely choose A, Probably choose A, Probably choose B, and Definitely choose B. Considered as continuous variables, responses were coded and added for the four items so that higher total scores, ranging from 1 to 4, indicated greater delay of gratification.

Academic Delay of Gratification's Motivational Determinants. To assess motivational determinants of ADOG, students also reported how strongly they agreed or disagreed with statements alluding to the delayed and the immediate alternatives presented in the ADOG situations described above (see Appendix A). As is shown in Appendix A and B, motivational determinants of delay preference were: *Importance* ("This is something that I would like to do."), *Utility* (e. g., "This is something that would be useful for me"), *Interest* (e.g., "This is something that would be interesting to me"), *Perceived Cost* (e.g., This is something that take a lot of time or effort"). *Social Expectancy* was accessed with two items (e. g., "This is something that would help me to achieve my social goals"). Students responded on a five-point scale from "strongly disagree" to "strongly agree" (coded 1 to 5). Differential scores between delay preference and immediate preference were obtained by subtracting responses to the immediate alternatives from the delay alternatives in all of the four items (e.g., interest for the delay alternative minus interest for the immediate alternative = difference for interest). Higher scores were thus indicative of greater differences for *interest, utility, importance, perceived cost, social expectancy* of the delay versus non-delay alternative. Appendix B summarizes the mean differential scores (t-test) between students' preference for the delay alternatives and the non-delay alternatives, as well as their correlation coefficients with academic delay of gratification. Appendix B also shows the items used to create these variables.

Personal Achievement Goal Orientations. Students' task , performance-approach, and performance-avoid goal orientations were measured with an adapted version of the Patterns of Adaptive Learning Survey (PALS, Midgley et al. 1997). The PALS contains three subscales that examine students' goal orientations in their classroom. First, the *Task Goal Orientation* scale (Cronbach α was .87, with a M = 5.16, SD = 1.34, 5-items) measures students' task engagement for the sake of developing competence and mastery (e. g., "I do my schoolwork in math because I am

interested in it'). Second, the *Performance -Approach Goal Orientation*(Cronbach α was .85, with a M = 3.97, SD = 1.52, 6-items) measures students' engagement in the tasks to demonstrate competence and skills (e.g., "I want to do better than other students in this class"). Third, the *Performance-Avoid Goal Orientation* (Cronbach α was .81, with a M = 2.64, SD = .1.26, 6-items) refers to students' intention to avoid demonstration of lack of skills (e.g., "The reason I do my work is so others won't think I'm dumb"). See Appendix C for sample items of the PALS. The PALS is a scale with the response format consisting of a 7-point Likert scale (1 = "Not at all true of me" and 7 = "Very true of me").

Volitional Strategies. The students also responded to a modified version (17-item) of the Academic Volitional Strategy Inventory (AVSI; McCann, 1998) that assessed college students' use of volitional strategies known to support and mediate cognitive and behavioral performance. The AVSI is based on the work of Corno (1993; Corno and Kanfer, 1993) and Kuhl (1985), with the response format consisting of a 7-point Likert scale (1 = "Not at all true of me" and 7 = "Very true of me"). Previous work by McCann (1998) identified subscales of the AVSI based on exploratory factor analysis. In the present study, I used fewer items. Thus, I performed a factor analysis using a principal components procedure and varimax rotation. Using the eigenvalue ≥ 1 criterion, six factors emerged, but not all were interpretable. Thus, I calculated the extraction of three factors. With a criterion factor loading of |.40|, the final three factors accounted for 45.5% of the variance, and were interpreted based on salient factor loadings (see Appendix C). Factor 1 (*Self-Efficacy Control;* Cronbach α was .74, with a M = 5.02, SD = 1.07, 7-items) represents behavioral control in which students reassure themselves about their capacity to do expected tasks (e.g., "I tell myself, 'I can do this'). Factor 2 (*Resource Control;* Cronbach α was .69, with a M = 3.67, SD = 1.27, 6-items) represents students' use of resource management strategies , such as seeking help from peers (e.g., "I call a friend from class and discuss the assignment or material with them." Factor 3 (*Motivational Control;* Cronbach α was .56, with a M = 3.40, SD = 1.33, 4-items) represent students' attempt to remind themselves of their goals and intentions and to increase motivation to comply with academic commitments (e. g., I do think about the kinds of job/career I may end up with if I flunk out of college).

Results

Preliminary analyses

I first examined the mean differences between students' preference for the delay and the non-delay alternatives that are used as indicator of students' motivational determinants of delay preferences for the entire sample. The results of the t-test analyses are shown in Appendix B.

Secondly, I examined the relationship between all the variables used in this study. It is worthy to note that goal task orientation is not significantly related to performance-approach goal orientation. However, performance-approach is highly related to performance-avoid goal orientation (r = .60, p <.001) and to motivational control (r = .44, p <.001).. Task goal orientation is related to students' use of self-efficacy control. Performance-avoid goal orientation is negatively related to task goal orientation (r = -. .36, p <.001) and motivational control (r = .43, p <.001). There are positive associations among the motivation determinants of delay preference with the exception of the perceived cost of success, which has a negative relationship with most of the variables.

Third, I conducted a K-means cluster analysis to examine within-subject response profiles between task, performance-approach, and performance-avoid goal orientations. This analysis produces an estimate of the within-subjects similarity and dissimularity. Three clusters were identified. Cluster 1 consisted of students with a performance-avoid goal orientation. Cluster 2 consisted of students with a task goal orientation. Cluster 3 consisted of students with a performance-approach goal orientation. After splitting the data between clusters, separate block hierarchical least-square regression equations were performed: one for the performance goal-oriented students and another for the task goal-oriented students (see Table 3).

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Fourth, I performed a discriminant functional analysis based on the three clusters to examine whether membership in a cluster was an accurate classification using as the independent variables task, performance-approach, and performance-avoid goal orientations. The results of the analysis demonstrated a 99% accurate classification of students according to their goal orientations.

Question 1.

The present study first addresses the following question: *are there differences among the students with task, performance-approach, and performance-avoid goal orientations on academic delay of gratification, motivational determinants, and use of volitional strategies?* I conducted a multivariate analysis of variance (MANOVA) with academic delay of gratification, expectancy-value determinants, and volitional strategies used as the dependent variables. The independent variables were the students' three goal orientations, performance-avoid goal oriented students (coded 1) task goal-oriented students (coded 2), and performance-approach goal oriented students (coded 3) identified by the cluster solution. The MANOVA was followed by twelve univariate ANOVAs, one per dependent variable. As shown in Table 1, results of the MANOVA indicated significant overall differences between cluster groups, $F_{multivariate}$ (2, 97) = 10.09, $p < 001$. Further, cluster groups were significantly different on all univariate measures, with the exception of perceived cost of success and the volitional strategy of resources control. As expected, the most salient univariate effects were that the performance-approach goal oriented students have greater tendencies for performance approach orientations [F (2,97) = 60.63, $p < 001$], goal task oriented students were higher in task goal orientation [F (2,97) = 5.81, $p < 001$], and performance-avoid goal oriented students were higher in performance avoid orientation [F (2,97) = 30.84, $p < 001$].

As expected, the task goal oriented students have greater preference for academic delay of gratification and the performance-avoid goal oriented students have the lowest mean preferences [F (2,97) = 5.37, $p < 01$]. Among the academic delay of gratification' motivational determinants, the task goal oriented students have the greatest mean differences in importance, utility, interest, and social expectancy and the performance-avoid goal oriented students have the lowest mean differences. That is, that the task oriented students overall have greater preference for the delay alternatives because they believe that that alternatives would help them to implement long-term academic goals. In relation to the volitional strategies, task goal oriented students and performance-approach goal oriented students reported that they use more self-efficacy control than the performance-avoid goal oriented students do. In contrast, the performance-approach goal oriented learners report greater use of motivational control than the other two groups.

Question 2

Is academic delay of gratification similarly related to goal orientations, motivational determinants, and use of volitional strategies among learners with task, performance-approach, and/or performance-avoid goal orientations? In order to examine these relationships, I examine the data by using Pearson correlation coefficients between academic delay of gratification and the other variables. Table 2 displays the correlations between academic delay of gratification and all of the variables for the entire group. In addition, Table 2 displays the correlations between academic delay of gratification and all of the other variables.

Entire Group. The correlational analyses for the entire group reveal that task goal orientation is significantly related to delay of gratification. This finding suggests that the students who report having a preference for academic tasks also report having an orientation toward mastery and understanding class work. This also suggest that these greater preference for delay of gratification is related to an intrinsic interested in learning and that these students focus their attention of tasks even in the present of non-delay attractive alternatives. Contrary to my expectations, delay preference is not significantly related to performance goal orientation ($r = -.07$, ns). Similarly, delay of gratification is not associated with performance-avoid goal orientation ($r = -.15$, ns).

Bivariate correlations among the academic delay of gratification's motivational determinant for the entire sample indicate that delay is significantly and positively related to all of the motivational determinants, with the exception of perceived cost of success with which delay is negatively related ($r = -.38$, $p < .01$). Academic delay of gratification has the strongest relationship with the students' belief in the importance and interest of engaging in less attractive but more valuable activities (e.g., getting a high final course grade) for the sake of achieving long-term goals in spite of more attractive alternatives (e.g., going to the movies). Accordingly, the students believe that the delay alternatives would help them achieve academic goals, avoid academic problems, achieve their social goals, and avoid social problems. In contrast, the students consider that the non-delay alternatives worry them and have more negative consequences than the delay alternatives. Simultaneously, they believe that the delay alternatives would require more time and effort than the non-delay alternatives, but they also believe that selecting the non-delay alternative would have negative consequence for them. In addition, the students believe that the delay alternatives have greater utility value than the non-delay alternative even when they like more and find more interesting the non-delay alternatives. In other words, even when they like the non-delay alternatives more and find them more interesting what would highly determine preference for delay of gratification is whether the students find the alternatives useful to accomplish long-term academic goals. This is the case even when the delay alternatives require time and effort regulation.

Among the volitional strategies used by the students to secure completion of academic tasks, control of self-efficacy is related to delay of gratification. In other words, students who choose to delay gratification report that they engage in behavioral activities, such as telling themselves that they can learn and understand the course material. In other words, they report that in order to accomplish academic tasks they activate their volition and sustain cognition and motivation by self-instruction directed to enhance self-efficacy beliefs. Further, these students hold a positive belief about their capabilities (Schunk & Zimmerman, 1997). Motivational control and control of resources are not related to delay preference.

Cluster Group. A comparison of the relationship between academic delay of gratification with the learners' goal orientation, motivational determinants of delay preference, and use of volitional strategies among the three groups identified by the cluster solution reveal important findings. First, I will examine the relationship between delay preference and students goal orientations among the students with a task, performance-approach, and performance-avoid goal orientations. Curiously, the correlation between delay and task goal orientation does not vary across the groups of students, although for the performance-avoid goal oriented learners the association did not reach a significant level due to a small sample in that group ($r = .37$, ns; $N = 25$). As expected, the performance-goal oriented learners are the only who report having a high performance approach orientation. Importantly, a z-test for testing the significance of the differences between the correlations of delay and performance-approach indicate that these variables are significantly different for each group ($p < .05$). Among the three groups there were not a significant relationship between delay and performance-avoid goal orientation.

Second, an examination of the relationship between delay and its motivational determinants reveal similar relationships among the groups regarding the students' differential importance for engaging in less attractive but more valuable tasks. The task and performance-approach goal oriented students report believing that the delay alternative has greater utility for them than for the performance-avoid goal oriented students. Importantly, the performance-avoid-oriented learners are the ones who reported greater interest for the delay alternatives. That is, they report that the delay alternative is interesting and that they like it more that what they like the non-delay alternatives. In relation to the perceived cost of success, the performance-avoid oriented students report greater belief that the non-delay alternatives worry them and would have negative

consequence for them. The performance-approach oriented students follow them in this belief. In contrast, the task goal oriented learners are not worry that much by the non-delay alternatives. Considering students' differential preference for social expectancy to succeed in the light of less attractive but more valuable alternatives suggest that performance-approach and performance-avoid oriented learners believe that the delay alternatives are of greater benefit to achieving social goals and avoiding social problems than the non-delay alternatives. In contrast, task goal oriented learners' preference for the delay alternatives have little to do with avoiding social problems or achieving social goals.

Third, among the three groups of students, the correlation between delay of gratification and the volitional strategy of self-efficacy control is greater among the task goal oriented learners, followed by the performance-approach goal oriented learners. That association among the performance-avoid goal oriented learners did not reach a significant level. Among the three groups, the association between delay and control of resource management was not significant, although among the performance-avoid students the significant level was marginally significant ($r = .41$, $p = .05$). This finding suggest that the performance-avoid oriented learners, for example, seek help from peers, look for different ways to make studying more fun, use relaxation techniques, and use self-rewards when distractions arise during tasks completion. Finally, the association between delay and motivational control was only significant for the performance-approach goal oriented learners.

Discussion

Individual Differences between Task Goal, Performance-Approach, and Performance-Avoid Goal-Oriented Students

The results of the multivariate analysis of variance (MANOVA) conducted in this study have important implications. There are clear differences among the three groups of students in practically all of the variables. Accordingly, task goal oriented learners report greater preference to remain task focused, have greater motivational tendencies, and report using self-regulation and volitional strategies than the performance-approach and performance-avoid goal oriented learners. In the opposite position are the performance-avoid goal oriented learners followed by the performance-approach goal oriented learners. Thus, given that delay of gratification deals with long-term goals, it appears that performance-avoid more than performance-approach goal-oriented learners engage in activities that provide immediate gratification even though that could be detrimental in the long-term. Performance-avoid goal-oriented students may not be well prepared for the demands and challenges of current trends in education that required postponement of attractive activities for the sake of valuable long-term goals.

It is worth noting that the students with high performance-approach orientation appears to have a good balance between goal orientation, delay of gratification's motivational determinants, and use of volitional strategies. This balance appears to function well in pursuing long-term goals and dealing with distractions. To illustrate. based on the result of the MANOVA it is clear that the performance-approach learners are not only high in performance-approach orientation, but they are also high in task goal orientation. Further, they are also high in performance-avoid orientation. Thus, these students report that in overcoming obstacles over time while pursuing academic goals they strategically orchestrate their goal orientations. It could be plausible to conclude that these learners are highly adaptable to the situations and task's demands. Similarly, performance-approach learners are also well balanced in the differential preference between the motivational determinants of delay. For example, they consider the delay alternatives as important and useful, but at the same time, they perceive the non-delay alternatives as highly interesting and socially beneficial, although they believe that not engaging in the delay alternatives would have negative consequence for them. Ultimately, they have a preference for selecting delay of gratification alternatives to secure the goals that they have set for themselves. They have the same pattern in relation to their use of volitional strategies. Again, they are high in self-efficacy control, almost at

the same level of the task goal oriented learners, Further, they are similar to the task goal oriented learners in the use of resources control and motivational control.

The task goal-oriented learners appear to orchestrate enactment of long-term goals and delaying gratification in a different fashion than the performance-approach learners. Task goal oriented learners have a high preference for delay of gratification. They are also very high in task goal orientation and low in performance-approach and performance-avoid goal orientations. This means that their preference for delay of gratification responses is highly associated with their intrinsic interest in the task and with trying to understand and master the tasks. In relation to the motivational determinants of delay preference, the task goal oriented learners' report that their preference for delay of gratification is highly associated to how useful and important the delay alternative is relative to the non-delay alternative. While the performance-approach and the performance-avoid goal oriented students highly consider how likeable and interesting the delay alternatives are in relation to the non-delay alternatives, the task goal oriented learners place high regard on how well the alternatives would help them to achieve academic goals and avoid academic problems, as well as their importance relative to their long-term goals. In relation to the use of volitional strategies, the task goal oriented learners have similar patterns to the performance-approach goal oriented learners, but significantly higher than the performance-avoid learners.

The situation of the performance-avoid goal oriented learners is unique. They scored low in almost all of the variables, although, as expected, they are relatively high in performance avoid orientation, but similar in this to the performance-approach learners. However, it is important to note that for these students reported low preference for delay of gratification. These students appears to be the less adaptable because they are low in task and performance-approach goal orientation. Furthermore, they report greater preference for the non-delay alternatives. In other words, they believe that the non-delay alternatives are more interesting, likeable, and socially favorable. Similarly, they somewhat believe that the delay alternatives are less important and useful, relative to the non-delay alternatives. They are less concerned about the negative consequence of selecting the non-delay alternatives regardless that the selection may preclude them from completing important academic tasks. Further, performance-avoid oriented learners report that while they are completing schoolwork if distraction arise they use less self-efficacy control, that is, they do not exert greater effort to maintain or increase their perceived self-regulatory efficacy. Likewise, if they get problem during homework completion, they report use less resources available to them, such as getting help from peers. Further, they report that in the face of difficulties, they do not exert significant control of their motivation. However, these finding should be interpreted with caution. The performance-avoid learners are not scoring extremely low in any of the domain assessed in this study. Thus, although somewhat low, they engage, at least in a limited degree, in tasks for the sake of understanding in addition to for the sake of competing with classmates for grades. Similarly, they place some degree of value to the delay alternatives and report use somewhat the volitional strategies. An interpretation of this pattern of behavior is that these are students who do not want to be deeply involved in academic tasks. Their interactions with academic tasks are somewhat superficial, and one thing that influence this pattern is their high preference for the non delay alternatives.

Relationship between Academic Delay of Gratification, Goal Orientations, Motivational Determinants, and Use of Volitional Strategies

The results of the bivariate correlations present a different picture of the differences between task, performance-approach, and performance-avoid goal oriented learners. First, the result show that having a task goal orientation is positively and significantly related to delay of gratification. This means that students who like the school work even if they make a lot of mistakes, who like to learn new things, and who engage in a class task because they are interested in it, also prefer to defer gratification for the sake of long-term academic goals. These students are self-regulated learners (Corno, 1993; García et al. 1998; Pintrich & De Groot, 1990; Zimmerman, 1998b). Equally

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important, for task goal oriented learners believing that the delay alternatives are *important, useful,* and *interesting* is related to preference for delay of gratification. That is, students who delay gratification, although they like the non-delay alternative, still prefer delay alternatives that would secure academic achievement. One of the most encouraging results is that among the task goal oriented learners academic delay of gratification is highly related to self-efficacy control.. In comparison to the other two groups of students, task goal oriented learners report greater use of volitional strategies. Notably, among these students, delay of gratification is not highly related to *importance. interest, and social expectancy* in comparison to the performance-approach and performance-avoid goal oriented students. I interpret these finding as an indication that these students are truly self-regulated learners whose learning approach involve volitional and motivational actions directed to enact goal completion.

Second, having a performance-approach goal orientation is related to delay of gratification. In other words, the students who are oriented to demonstrate their competence are also willing to delay gratification. These results supports previous finding that indicate that performance or intrinsic goal orientation is not necessary detrimental for academic learning (Pintrich & García, 1994). Further, these results support Bembenutty's (1997; Bembenutty & Karabenick, 1999) finding that performance goal orientation is positively associated with delay of gratification. Accordingly, wanting to do better than other in the classroom appears enhance deferment of gratification and therefore it may help maintaining intentions and pursuing academic goals. Thus, demonstrating competence or trying to do better than other students in a classroom does not necessarily preclude students from pursuing long-term goal. Another important unique pattern of the performance-approach goal oriented learners is that among them delay of gratification is highly and positively associated with importance, interest, and social expectancy. In contrast to the task goal oriented learners, performance-approach goal oriented learners' preference for the delay alternatives is associated to achieving social goals or to avoiding social problems. This is contrary to what is often assumed; that delay gratification prevents students from accomplishing social goals. These students believe that the delay alternatives are social-goal facilitators.

Third, among the performance-avoid goal oriented learners delay of gratification is highly related to the importance, interest, and social expectancy, but it was significantly and negatively related to perceived cost of success. Among these students, delay of gratification was not associated to any of the volitional strategies.. These results support the notion that performance - avoid learners' preference for delay of gratification is highly related to the relative expectancy value placed in the delay and non-delay alternatives, rather than on their use of volitional strategies. I interpret these finding as suggesting that this group of students are the students whose engagement is the classroom is highly related to their beliefs and affect, rather than to their use of volitional strategies.

In the present study, the volitional strategy that was strongly related to delay of gratification was self-efficacy control. That is, volitional control through enhancement of self-efficacy control leads to greater preference for delay of gratification. This is important because self-efficacy here is not a character trait of the student nor an intrinsic motivation, Here, self-efficacy is a strategy that learners can learn to manipulate motivation and action in the anticipation of long-term goals. Indeed, by using self-efficacy control, learners act as "personal agents" that are able to exercise control over their social structure (Bandura, 1999). Further, these students are able to strategically translate into proficient action their self-efficacy beliefs (Bandura, 1999; Pajares & Graham, 1999; Pajares, Miller, & Johnson, 1999; Schunk, 1991; Zimmerman, 1998b).

Surprisingly, motivational control is not significantly related to delay preference, with the exception of the performance-approach learners). There are three plausible explanations for this finding. First, the items of the motivational control scale are somehow framed in a negative way (e. g., "I think about the mistakes that I have made on past assignments and exams when I have

postponed about getting down to studying"). It is possible that centering the source of motivation on past mistakes or disappointments, rather than on present or future accomplishments, does not lead to delay of gratification. This position may have important educational applications. For example, if educators and parents emphasize the consideration of past mistakes to motivate the students, it could preclude them from enacting long-term goal. Thus, the popular expression of "learning from previous mistakes" in relation to delay of gratification, may not work if the emphasis is on previous mistakes. Second, an emphasis on previous mistakes may increase frustration because the only things that is under consideration are the students' mistakes rather than considering ways to overcome the attractive temptations (Mischel, 1993). Third, attention to the outcomes while delaying gratification is associated with low preference for delay of gratification (see Mischel, 1993). For example, consider a student who has refused to attend a party with her friends because she wants to stay home to study for a test. If she starts thinking about how badly she has done on a previous test when she chose to go to a party, soon she will not resist temptation because given that she likes going to the party more than studying, going to the party will too appealing in the present. In other words, thinking about something that she wants (e.g., party) but can not have eventually will decrease motivation, which in turn will not facilitate delay. These suggestion are in accord with Gray's (1999) contention that negative emotional states bias individual toward short-term thinking that will preclude them from delaying gratification.

Limitations of the Study

It is important to comment on the limitations of this study, First, the ADOGS is a self-report instrument and therefore any student's actual selection between a delay or non-delay alternative it is not known. Thus, experimental validity is necessary to clarify the relationship between students' delay preference and actual alternative selection. Second, the present study uses a small sample, thus effect size is large. This is the case especially when many dependent variables are included in a regression equation. A final limitation is that the participants are college students. Thus, these findings may not apply to students at different academic levels. In other words, whether these findings will replicate in a different sample is an empirical question. It could be possible that these findings might show even stronger disparities in explaining academic delay of gratification and performance and task goal orientations among junior and high school students. For example, in junior high school critical skills are related to learning development. In junior high school gender differences in math are highly associated with task engagement (Eccles et al. 1985), social competence (Wentzel, 1991), and social factors related to help seeking (Ryan & Pintrich, 1997). Future research is needed to explores these differences among junior and high school students.

Conclusion

In summary, this study sought to demonstrate differential explanations of academic delay of gratification among task, performance-approach, and performance-avoid goal-oriented students. These differences appear are highly a related to the students' different motivational tendencies and use of volitional strategies. These differences have important implications for understanding learners' engagement in attractive activities (e. g., going to the movies) or less attractive but more valuable alternatives (e. g., getting good grades), as well as attainment of selected goals. Students with a mastery and understanding goal orientation maintain intention to learn even in the present of distractions (see Midgley & Edelin, 1998). Further, mastery and understanding is associated with students' attainment of long-term academic goals. Likewise, competence and grade-striving is not necessarily detrimental to learning if the students use volitional strategies and place a great value to the delay alternatives that are conducive to long-term academic goals. In contrast, having a performance-avoid goal orientation is related to high preference for not delay alternatives. Further, even in the event in which these students like more the delay alternatives if they do not use volitional strategies when distraction arise they will be tempted to accepting alternatives that are not instrumental to goal completion and enactment of long-term academic goals.

The implication of these results in relation to the model of self-regulation (Appendix B) suggested here is of crucial. These findings support the contention that academic delay of gratification could be considered an outcome of motivational engagement in academic tasks and the use of volitional strategies. That is, academic delay of gratification is associated with students' differential preference for engaging in less attractive but more valuable activities (e. g., getting a high final course grade) for the sake of achieving long-term goals in spite of more attractive alternatives (e. g., going to the movies). From the present study, it is also concluded that academic delay of gratification does not operate like a character trait that precedes volition, motivation, and cognition. In contrast, academic delay of gratification is associated with motivation, volition, and cognition. In other words, volition, motivation, and cognition are the factors without which academic delay of gratification could happen. The present study suggest the importance of academic delay of gratification as an individual difference dimension in adult learners that can serve to understand learners academic achievement.

Notes

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[2] Indeed, the students responded to four items of the ADOGS. An item was dropped from further analyses due to low correlation with the other items. Further, if this item were retained it would lower the internal consistency as indicated by the Cronbach α.

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Table 1

Descriptive Statistics and Multivariate Analysis of Variance (MANOVA) Summary for Academic Delay of Gratification, Its Motivational Determinants, Goal Orientations, and Volitional Strategies among the Task Goal, Performance-Approach, and Performance-Avoid Oriented College Students Identified by a Hierarchical Cluster Solution

	Task Goals		*Performance-Approach*		*Performance-Avoid*		
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Univariate ANOVA
	(N = 45)		(N = 32)		(N = 25)		
ADOG	3.13	.67	2.97	.67	2.52	.69	5.37**
Goal Orientations							
Task Goal	5.81	1.08	5.52	.70	3.49	.93	44.12***
Performance-Approach	2.73	1.04	5.46	.68	4.34	1.07	60.63***
Performance Avoid	1.68	.70	3.35	1.07	3.47	1.06	30.84***
ADOG's Motivational Determinants[a]							
Importance	1.67	1.22	1.34	1.06	.32	1.26	8.67***
Utility	2.60	1.08	2.17	.83	1.70	.77	7.64**
Interest	-.04	1.24	-.81	1.27	-1.18	1.13	9.92**
Perceived Cost of Success	.02	.73	.22	.65	.41	.69	2.59
Social Expectancy	-.11	1.59	-.97	1.10	-1.14	1.18	4.54*
Volitional Strategies							
Self-Efficacy Control	5.25	1.15	5.17	.94	4.45	.90	6.45**
Resources Control	3.90	1.51	3.58	1.10	3.38	1.10	2.13
Motivational Control	3.84	1.17	3.92	1.44	3.68	1.10	3.45*

Note: Significance levels are denoted as follows: *p < .05, ** p < .01, *** p < .001. P-values are for univariate F-ratios with a (2,97) degree of freedom. [a]These are the differences between the delay and the non-delay alternatives; thus, positive correlations indicate greater agreement with the delay alternative and the negative correlations indicate greater agreement with the non-delay alternative. MANOVA using all variables: F (2,97) = 10.09, p < 001.

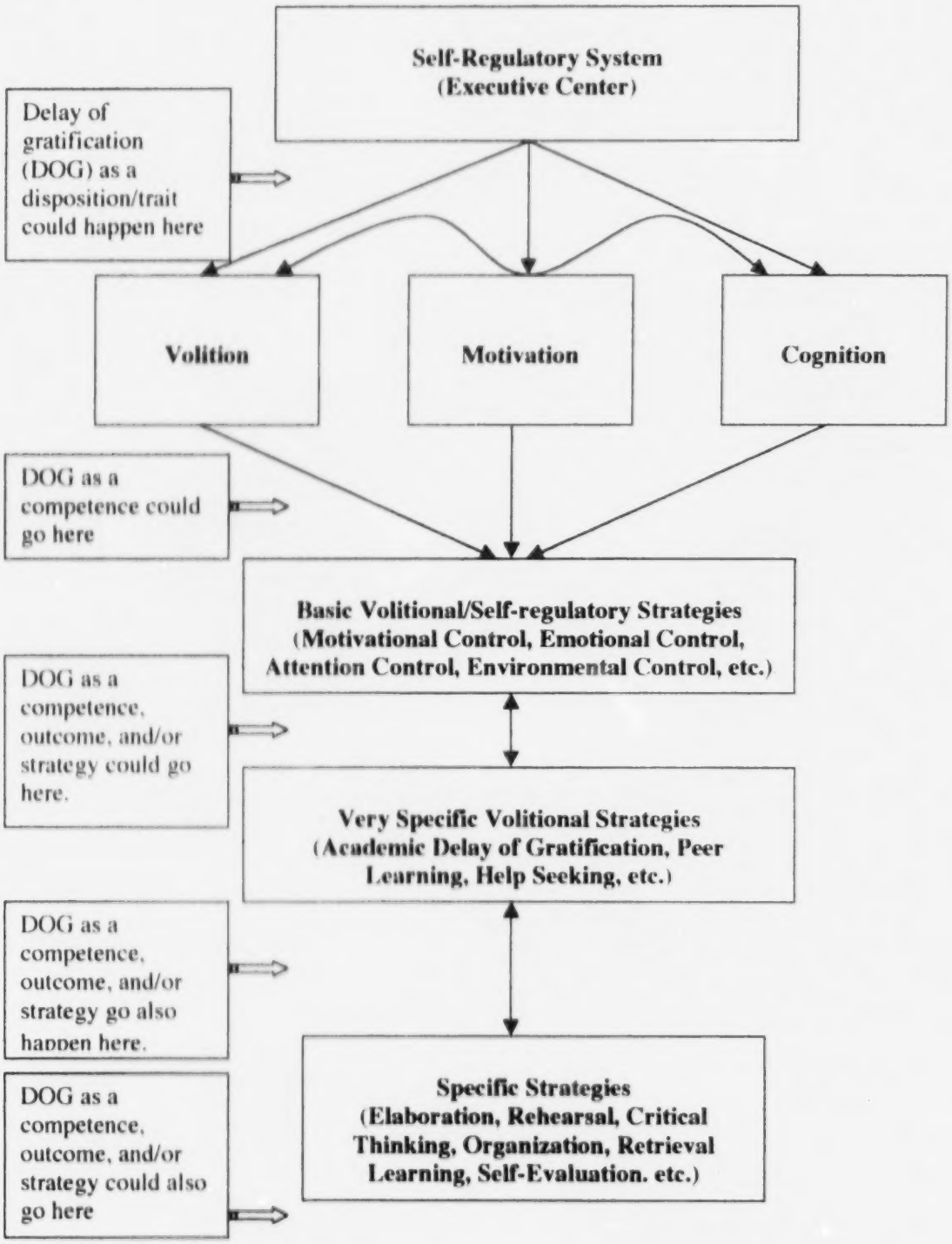
Table 2.
Bivariate Correlations between Academic Delay of Gratification (ADOG), Its Motivational Determinants, Goal Orientations, and Volitional Strategies among the Cluster Solution for Task, Performance -approach, and Performance-Avoid Goal Orientations

		Correlation with ADOG among the Cluster Solutions		
	Entire Group (N = 102)	Task Goal (N = 45)	Performance-Approach (N = 32)	Performance-Avoid (N = 25)
Goal orientations				
Task goal	.50***	.35*	.38*	.37
Performance-Approach	-.07	.10	.53**^	-.27^
Performance-Avoid	-.15	-.14	.18	.06
ADOG's Expectancy-value Determinants[a]				
Importance	.59***	.49**	.54**	.63**
Utility	.38***	.42**	.35	-.09^
Interest	.62***	.46**	.61***	.74***
Perceived Cost	-.38**	-.13	-.42*	-.58**
Social Expectancy	.39***	.14	.50**	.57**
Volitional Strategies				
Self-Efficacy Control	.52***	.60***	.41*	.26
Resources Control	.18	.12	-.05	.41
Motivational Control	.15	.14	.39*	.16

Note: Significance levels are denoted as follows: *p < .05; ** p < .01; *** p < .001. Cronbach alphas for ADOG, task goal orientation, performance-approach goal orientation, and performance-avoid goal orientation are : .72, .87, .85, and .81 respectively. Cronbach alphas for the volitional strategies are: Self-efficacy control (.74), Resources control (.73), and Motivational control (.56). [a]These are the differences between the delay minus the non-delay alternatives; thus, positive correlations indicate greater agreement with the delay alternative and the negative correlations indicate greater agreement with the non-delay alternative. ^A z-test for testing the significance of the differences between the correlations indicate that these variables are significantly different (p < .05)

Figure 1

A Model of Self-Regulation with Academic Delay of Gratification


Self-Regulatory System
(Executive Center)
Delay of gratification (DOG) as a disposition/trait could happen here
Volition
Motivation
Cognition
DOG as a competence could go here
Basic Volitional/Self-regulatory Strategies
(Motivational Control, Emotional Control, Attention Control, Environmental Control, etc.)
DOG as a competence, outcome, and/or strategy could go here.
Very Specific Volitional Strategies
(Academic Delay of Gratification, Peer Learning, Help Seeking, etc.)
DOG as a competence, outcome, and/or strategy go also happen here.
Specific Strategies
(Elaboration, Rehearsal, Critical Thinking, Organization, Retrieval Learning, Self-Evaluation. etc.)
DOG as a competence, outcome, and/or strategy could also go here

Appendix A

Sample Item from the Academic Delay of Gratification Scale

Situation 1

Academic Delay of Gratification

Which of the following would you choose to do?

A. Delay studying for an exam in this class the next day even though it may mean getting a lower grade, in order to attend a concert, play, or sporting event. ***OR***

B. Stay home to study to increase your chances of getting a high grade on the exam.

Choose One[a]

__Definitely choose A *__Probably choose A* *__Probably choose B* *__Definitely choose B*

Motivational Determinants of Academic Delay of Gratification

Next indicate (by writing a number in front of each of the statements) how strongly you agree or disagree with the statements below use the following scale:

1 = Strongly Disagree *2 = Disagree* *3 = Neither Agree nor Disagree*

4 = Agree *5 = Strongly Agree*

Going to a favorite concert, play or sporting event.	**Staying home to study**
This is something that would...	This is something that would...
_____ Be important for me	_____ Be important for me
_____ Be useful for me	_____ Be useful for me
_____ Be interesting to me	_____ Be interesting to me
_____ Worry me	_____ Worry me
_____ Have negative consequences for me	_____ Have negative consequences for me
_____ Take a lot of time or effort	_____ Take a lot of time or effort
_____ Increase my chances of getting a good grade	_____ Increase my chances of getting a good grade
_____ Help me to achieve my academic goals	_____ Help me to achieve my academic goals
_____ Help me to achieve my social goals	_____ Help me to achieve my social goals
_____ Help me to avoid academic problems	_____ Help me to avoid academic problems
_____ Help me to avoid social problems	_____ Help me to avoid social problems
_____ Conflict with having fun	_____ Conflict with having fun
_____ I would like to do	_____ I would like to do

Note: [a] Values are based on a 1 ("Definitely choose A") to ("Definitely choose B") coding responses, with higher values indicating greater preference for academic delay of gratification..

Appendix B

Scales, Sample Items, and Reliability Cronbach Alphas

Goal Orientations [a]

PATTERNS OF ADAPTIVE LEARNING SURVEY (PALS; Midgley et al., 1997)

Task Goal Orientation (α = .87)

- An important reason why I do my work for this class is because I like to learn new things.
- I do my work in this class because I am interested in it.

Performance-Approach Goal Orientation (α = .85)

- I want to do better than other students in this math class.
- I would feel successful if I did better than most of the other students in this math class.

Performance-Avoid Goal Orientation (α = .81)

- An important reason I do my math work for this class is so that I do not embarrass myself.
- It is very important to me that I do not look stupid in this math class.

Volitional Strategies [a]

ACADEMIC VOLITIONAL STRATEGY INVENTORY (AVSI; McCann, 1998)

Self-Efficacy Control (α = .74)

- I tell myself that I will be able to understand and remember this course material
- I tell myself, "I can do this!"

Resources Control (α = .69)

- I call a friend from class and discuss the assignment or material with them.
- I do think of interesting or different ways to make studying more fun or challenging for me.

Motivational Control (α = .56)

- I do think about how disappointed others (family/friends) will be if I do poorly.
- I do think about the kinds of jobs/career that I may end up with if I flunk out of college.

Note: [a]The response format consisted of a 7-point Likert scale (1 = "Not at all true of me" and 7 = "Very true of me").

Appendix C

Mean Differences between Students' Preference for the Delay alternatives and the Non-delay alternatives and their Correlation Coefficients with Academic Delay of Gratification (ADOG)

ADOG Expectancy-value Determinants	Delay alternative (e.g., Staying home to study) Mean	SD	Non-delay alternative (e.g., Going to a favorite concert) Mean	SD	T-test	r with AD
Importance						
Would be important for me	4.08	.68	2.83	.89	9.64***	.59***
Utility						
Would be useful for me	4.34	.48	2.60	.67	17.99***	.41***
Increase my chances of getting a good grade	4.42	.52	1.85	.79	22.87	.30**
Help me to achieve my academic goals	4.41	.58	1.90	.77	22.14***	.34**
Help me to avoid academic problems	4.21	.66	204	.81	17.15***	.29**
Interest						
Would be interesting to me.	3.23	.89	3.69	.76	-3.51**	.60***
I would like to do	2.26	.93	2.52	.86	-2.31*	.55***
Cost						
Worry me	2.26	.93.	2.52	.68	-2.31*	-.25*
Have negative consequence for me	1.72	.72	3.19	.78	-13.84***	-.30**
Take a lot of time and effort	3.57	.78	2.61	.81	9.49***	-.10
Conflict with having fun	3.43	.88	2.00	.72	11.71***	-.32**
Social Expectancy						
Help me to achieve my social goals	2.63	.82	3.25	.95	-4.38***	.39***
Help me to avoid social problems	2.61	.83	2.93	.90	-2.50*	.32**

Note: Significance levels are denoted as follows: *p < .05; ** p < .01; *** p < .001. N = 102. ^a Positive means differences indicate greater agreement with the delay alternative and the negative mean differences indicate greater agreement with the non-delay alternative.